nimis vel minimè nos craſtino afficiunt die. Immo ad hanc omnem diverſitatem operantur Temperie ſolummodo differentibus.

Quum igitur tam invicta ſit ubiq; difficultas in debita Pharmacorum evacuantium doſe decernendâ; optandam eſſet, methodus quâ poſſimus eadem abſq; dubio adminiſtrare.

Methodum hanc apodeicticis expedit argumentis, ſimul & ſigillis occluſam præſidi noſtro commiſit.

Rogat tamen Medicos quoſlibet, quænam ſit illa vel ſimilis Methodus quâ ſine errore dirigamur; eorumque ſolutiones ad Cal. Mart. 1705-6 exportabit, quas poſtmodum cum ſuâ publicabit.

VIII. *Part of a Letter from* Dr David Krieg, *F.R.S. to the Publiſher, concerning* Cobalt, *and the Preparations of* Smalt *and* Arſenic.

I Spent about 8 weeks in my own Country, and my chiefeſt Buſineſs was to enquire for the Minerals found thereabout, and to obſerve their preparations. Firſt, I ſhall deſcribe the preparation of the blue *Colour*, called *Smaltum*, which is made of *Cobalt* or *Cadmia nativa*, becauſe it is not clearly deſcribed by any Author, as much as I know.

Now the *Cadmia* or *Cobalt* is a maſſie, heavy, grey ſhining Stone, found in a great quantity in the Mines about *Shneeberg*, and ſome other places of *Hermanduria*. It is very often mixed with Marcaſite, ſometimes with Silver and Copper Oar, yea, the Silver is (but ſeldom) pure in the Figure of Hair.

After they have pick'd out the *Cobalt*, and ſeparated it from the common Stone, they beat it to Powder by an Engine or Machine, commonly uſed in Mines (called a Poolwork.) By that Operation, the Water carries away the light ſtuff and Sand, leaving the heavieſt behind.

This Powder is afterwards put into a low and broad Furnace, made on purpoſe to ſeparate the Sulphur and Arſenick; where the Powder is ſpread all over, and the Fire, which is beneath and behind it, is forced to paſs its flame along over the Powder, and ſo to take along with it the Arſenick in form of a Smoak, which afterwards is receiv'd by a low Chimney, and out of that carried in a cloſe Channel made of Brick wall, of about 50 or more paces, where the Arſenick by the way ſticks to the Wall, in form of a White or Yellowiſh Powder. The ſame is taken out every 6 months and melted into whole pieces.

The *Cobalt* thus roaſted, and ſmoaking little more, being red hot, is taken out, cooled again and gathered for melting. Its *Colour* by that way of roaſting is turned a little more whitiſh.

When they have a mind to melt it, the Powder of the *Cobalt* is mixed with Pot Aſhes and Powder of White Flint Stones: The proportion of them is according to the goodneſs of the *Cobalt*, or as they will make the *Smalt* of a deep or paler colour: For Example, they take one part of Pot Aſhes, two parts of *Cobalt*, and 3 or 4 parts of Flint. This Mixture is put into great ſtrong Pots, ſtanding in a hot Furnace; 6 or 8 Pots in one Furnace; there it ſtands a melting for 5 or 6 hours time, turning into a blue Glaſs, which afterwards is taken out with a great Iron Spoon and put into a Veſſel full of cold Water, where it cracketh and grows more tender, to be the more eaſily powdered again: But the empty pot in the Furnace is filled up again with the aforeſaid mixture. And ſo they continue night and day, not leaving off the fire in the Furnace.

The blue Glaſs taken out of the Water is powdered again by the ordinary Engine; the fineſt, ſeparated by a Sieve, is put into a Mill, and grinded in Water into the fineſt Powder, which by waſhing is ſtill ſeparated from the Courſer.

The ſame is afterwards dryed in little and warm Chambers, put into Barrels, and thus ſent away to ſeveral Countries.

If one of the Melting Pots breaks, or is very much burnt, ſo that it muſt be taken out, there they find always on the bottom two Cakes of different ſtuff, not mixed with one another. The undermoſt is a ſort of *æs Caldarium* or (*Gleiken Spiſſe*) and the uppermoſt is of *Marcaſit.*

The Graſs and Fruits growing there about, where ſuch a Work-houſe ſtands, is commonly poiſoned by the Arſenical Smoak, that no Cattel or Men can without damage feed upon them.

Explication of the Figures, Tab. 4. concerning the making of Smalt.

Fig. 1, 2.

THe Furnace where the Cobalt is roaſted, and the the Arſenick ſeparated.

a The Furnace to roſt the Powder'd Cobalt.
b The Chimney accepting the Arſenical Smoak.
c. c. c. The Channel of Stones to collect the Arſenick.

Fig. 3.

The Furnace for melting the Cobalt into a Glaſs.

a a a a the holes where ſtand the Melting Pots.

The great holes, where they put in the Pots is ſhut up with Bricks, and a little one left, where they take out the Glaſs with the Spoon. b b b b.

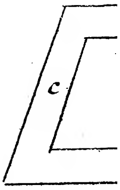
Fig. 4.

2 Grinding Stones to Grind in Water.

Printed for *Sam. Smith* and *Benj. Walford*, Printers to the Royal Society, at the *Princes Arms* in *St Paul's* Church-yard, 1705.

Philos: Transact: No. 293.

Tab: 5.



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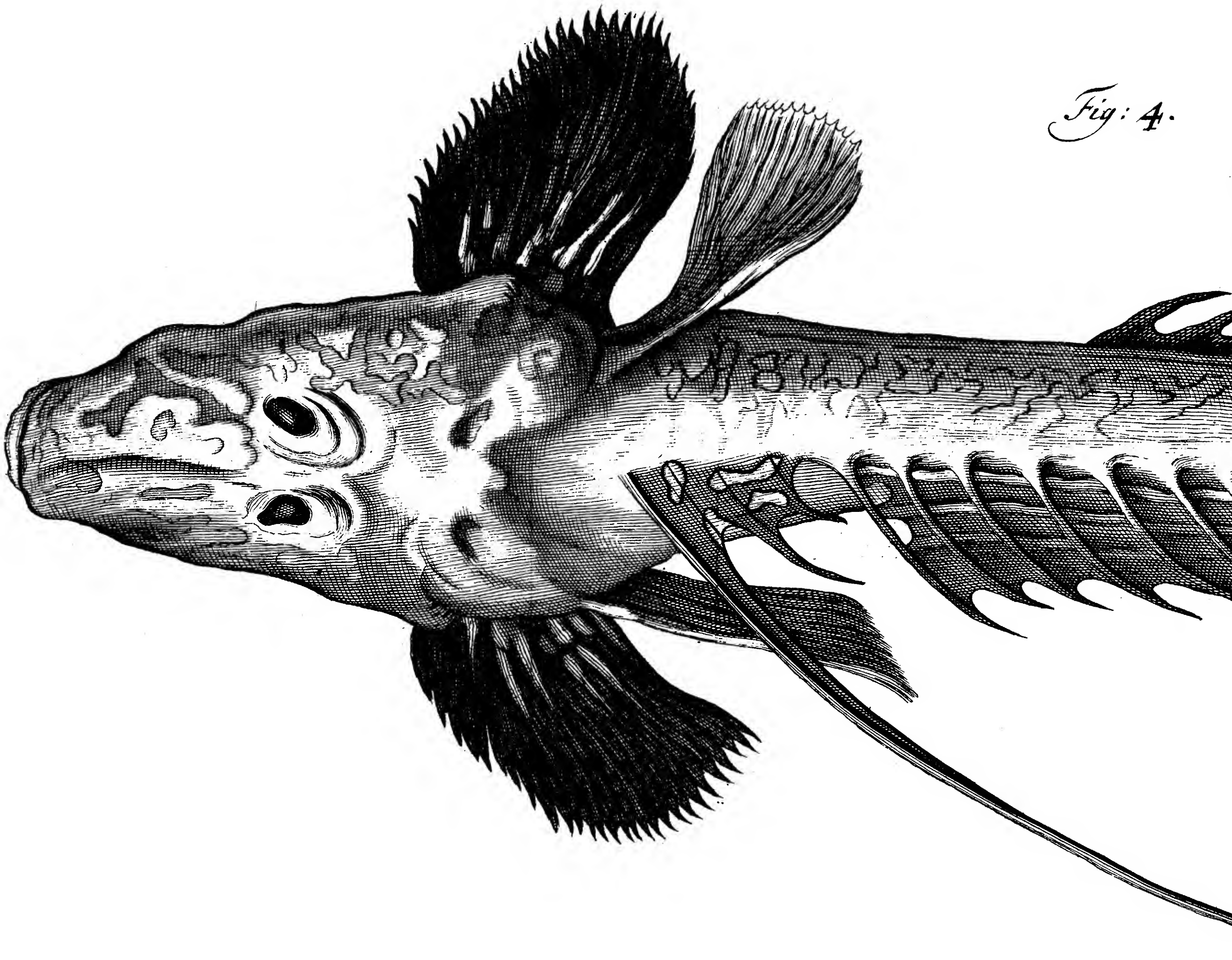

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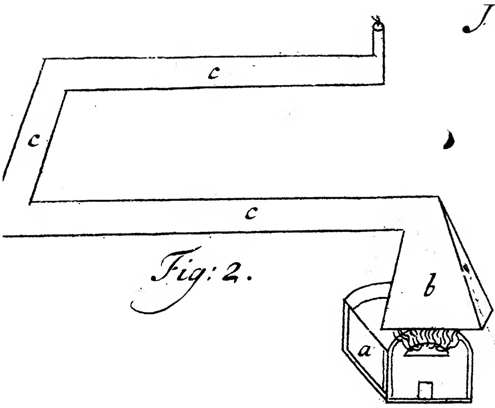
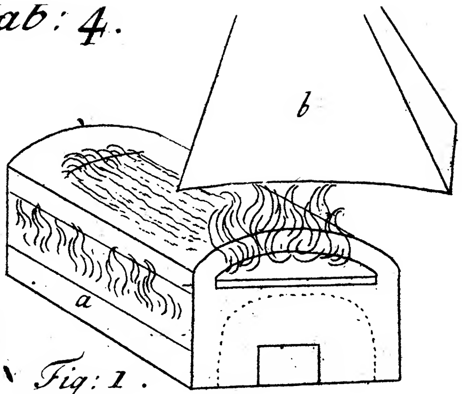


Fig: 2.



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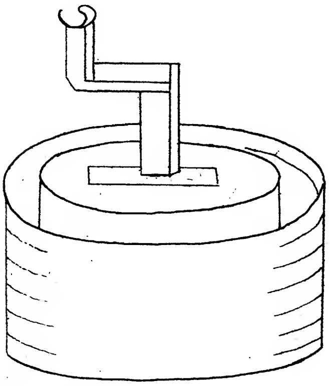

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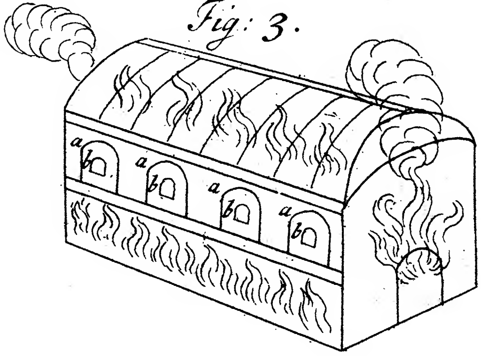
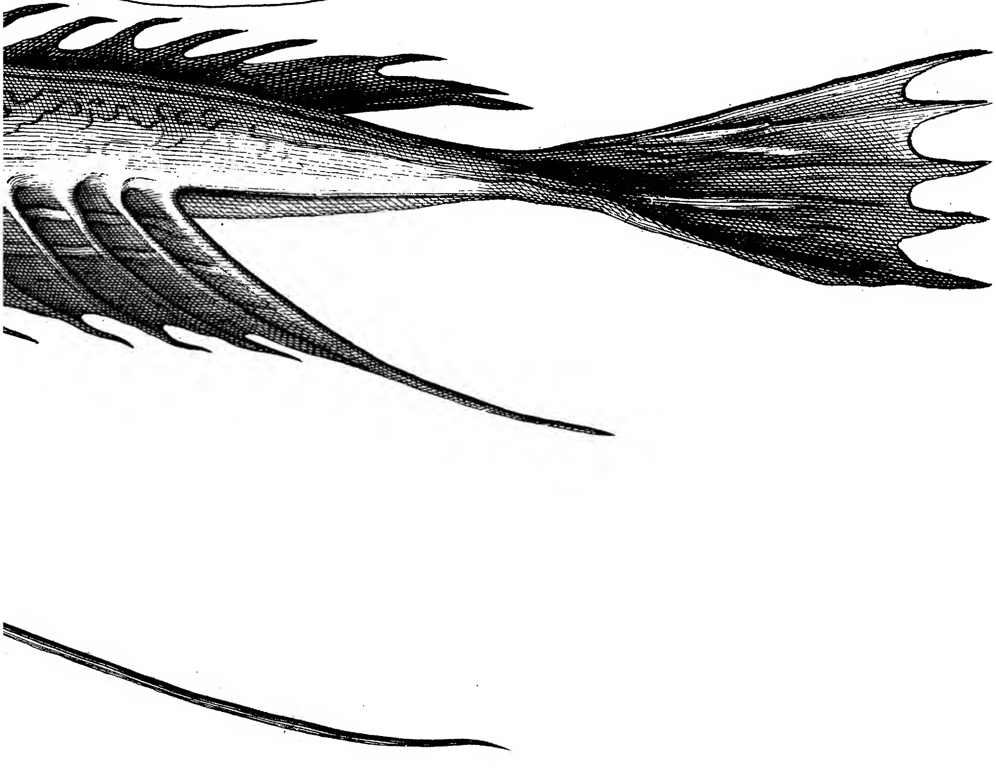
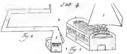




Philos. Transact. No 293.

Tab 4



Tab 5